

a spinal distractor for positioning adjacent vertebral bodies of two adjacent vertebrae adjacent a disc space in selected relationship to each other, said spinal distractor comprising:

a body having a height greater than the height of the disc space; and

at least one disc penetrating extension extending from said body for insertion into the lateral aspect of the disc space from a position anterior to the transverse processes of the adjacent vertebrae, said disc penetrating extension having a portion for bearing against each of the adjacent endplates of the two adjacent vertebral bodies, said portion of said disc penetrating extension having a height less than the height of said body and a length that is less than the transverse width of the vertebral bodies, said length being greater than the depth of the spinal disc intermediate the two adjacent vertebral bodies between which said disc penetrating extension is inserted; and

a guard having an opening for providing protected access to the disc space and the adjacent vertebral bodies, said spinal distractor passing through said opening.

114. (Amended) An apparatus for use in human spinal surgery across a disc space between the vertebral bodies of two adjacent vertebrae, comprising:

a guard member having a height greater than the height of the disc space and an opening for providing protected access to the lateral aspect of the disc space and the

adjacent vertebral bodies from a position anterior to the transverse processes of the adjacent vertebrae, said opening having a maximum height; and

at least two disc penetrating extensions extending from said guard member for insertion into the lateral aspect of the disc space from a position anterior to the transverse processes of the adjacent vertebrae, said disc penetrating extensions having a portion for bearing against each of the adjacent endplates of the adjacent vertebral bodies, said portion of said disc penetrating extensions having a height less than the height of said guard member and a length that is less than the transverse width of the vertebral bodies, said length being greater than the depth of the disc space, said portion of said disc penetrating extensions having an upper surface adapted to contact one of the adjacent endplates of the adjacent vertebral bodies and a lower surface adapted to contact the other of the adjacent endplates of the adjacent vertebral bodies at more than one point through the disc space, said disc penetrating extensions being of a different height.

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115. (Amended) An apparatus for use in human spinal surgery across a disc space between the vertebral bodies of two adjacent vertebrae, comprising:

a guard member having a height greater than the height of the disc space and an opening for providing protected access to the lateral aspect of the disc space and the adjacent vertebral bodies from a position anterior to the transverse processes of the adjacent vertebrae, said opening having a maximum height; and

at least two disc penetrating extensions extending from said guard member for insertion into the lateral aspect of the disc space from a position anterior to the transverse processes of the adjacent vertebrae, said disc penetrating extensions having

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a portion for bearing against each of the adjacent endplates of the adjacent vertebral bodies, said portion of said disc penetrating extensions having a height less than the height of said guard member and a length that is less than the transverse width of the vertebral bodies, said length being greater than the depth of the disc space, said portion of said disc penetrating extensions having an upper surface adapted to contact one of the adjacent endplates of the adjacent vertebral bodies and a lower surface adapted to contact the other of the adjacent endplates of the adjacent vertebral bodies at more than one point through the disc space, said disc penetrating extensions being of a different length.

131. (Amended) An apparatus for use in human spinal surgery across a disc space between the vertebral bodies of two adjacent vertebrae, comprising:

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a guard member including a hollow tube having a height greater than the height of the disc space and an opening for providing protected access to the lateral aspect of the disc space and the adjacent vertebral bodies from a position anterior to the transverse processes of the adjacent vertebrae, said opening having a maximum height, said hollow tube having a detachable distal end portion; and

at least one disc penetrating extension extending from said guard member for insertion into the lateral aspect of the disc space from a position anterior to the transverse processes of the adjacent vertebrae, said disc penetrating extension having a portion for bearing against each of the adjacent endplates of the adjacent vertebral bodies, said portion of said disc penetrating extension having a height less than the height of said guard member and a length that is less than the transverse width of the vertebral bodies, said length being greater than the depth of the disc space, said portion

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of said disc penetrating extension having an upper surface adapted to contact one of the adjacent endplates of the adjacent vertebral bodies and a lower surface adapted to contact the other of the adjacent endplates of the adjacent vertebral bodies at more than one point through the disc space.

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136. (Amended) The apparatus of claim 135, wherein said disc penetrating member has a tapered leading end to facilitate placement of said disc penetrating member into the disc space.

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138. (Amended) An apparatus for use in human spinal surgery across a disc space between the vertebral bodies of two adjacent vertebrae, comprising:

a guard member having a height greater than the height of the disc space and an opening for providing protected access to the lateral aspect of the disc space and the adjacent vertebral bodies from a position anterior to the transverse processes of the adjacent vertebrae, said opening having a maximum height;

at least one disc penetrating extension extending from said guard member for insertion into the lateral aspect of the disc space from a position anterior to the transverse processes of the adjacent vertebrae, said disc penetrating extension having a portion for bearing against each of the adjacent endplates of the adjacent vertebral bodies, said portion of said disc penetrating extension having a height less than the height of said guard member and a length that is less than the transverse width of the vertebral bodies, said length being greater than the depth of the disc space, said portion of said disc penetrating extension having an upper surface adapted to contact one of the adjacent endplates of the adjacent vertebral bodies and a lower surface adapted to

contact the other of the adjacent endplates of the adjacent vertebral bodies at more than one point through the disc space; and

an extractor coupler having one end adapted to couple with said guard member and an opposite end adapted to couple with an extraction device.

139. (Amended) An apparatus for use in human interbody spinal surgery across a disc space between the vertebral bodies of two adjacent vertebrae, comprising:

a guard member having a proximal end, a distal end, a height greater than the height of the disc space, and at least one passageway adapted to permit the passage of a bone removal device therethrough for providing protected access to the disc space and the adjacent vertebral bodies, said passage having a maximum height; and

at least one disc penetrating extension extending from said distal end of said guard member for insertion into the disc space, said disc penetrating extension being separable from said proximal end of said guard, said disc penetrating extension having a portion for bearing against each of the adjacent endplates of the adjacent vertebral bodies, said portion of said disc penetrating extension having an upper surface adapted to contact one of the adjacent endplates of the adjacent vertebral bodies and a lower surface adapted to contact the other of the adjacent endplates of the adjacent vertebral bodies intermediate the two adjacent vertebral bodies between which said disc penetrating extension is inserted.

Please add the following new claims:

--141. The apparatus of claim 114, wherein said upper and lower surfaces are at least in part parallel to each other.

142. The apparatus of claim 114, wherein said guard member has an external surface at its distal end and said disc penetrating extensions are at least in part coextensive with said external surface.

143. The apparatus of claim 114, wherein said disc penetrating extensions are diametrically opposed to each other.

144. The apparatus of claim 114, wherein said disc penetrating extensions are of a different length.

145. The apparatus of claim 114, wherein said portion of said disc penetrating extension has a height between said upper and lower surfaces that approximates the height of the normal disc space between the adjacent vertebral bodies.

146. The apparatus of claim 114, wherein said guard member conforms at least in part to the exterior surface of the vertebral bodies of the lateral aspect of the adjacent vertebral bodies.

147. The apparatus of claim 114, further comprising means for penetrating the two adjacent vertebral bodies.

148. The apparatus of claim 147, wherein said penetrating means includes teeth for insertion into the spine.

149. The apparatus of claim 147, wherein said penetrating means includes at least one prong for insertion into the spine.

150. The apparatus of claim 114, further comprising a removable inner sleeve.

151. The apparatus of claim 114, further comprising means for limiting the depth of penetration of said disc penetrating extensions into the disc space.

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152. The apparatus of claim 114, wherein said guard member comprises a hollow tube.

153. The apparatus of claim 152, wherein said hollow tube has a detachable distal end portion.

154. The apparatus of claim 114, wherein said disc penetrating extensions have a tapered leading end to facilitate placement of said disc penetrating extensions into the disc space.

155. The apparatus of claim 114 in combination with a bone removal device having a portion sized for passage through said opening of said guard for forming through said opening of said guard member an implantation space across the disc space.

156. The apparatus of claim 114 in combination with an implant driver sized in part for passage through said opening of said guard for passing an implant through said guard member and into the disc space.

157. The apparatus of claim 114 in combination with a spinal distractor sized for passage through said guard member, said spinal distractor having a body and a disc penetrating member extending from said body and into the disc space between the two adjacent vertebral bodies for bearing against the adjacent endplates of the two adjacent vertebral bodies.

158. The apparatus of claim 157, wherein said disc penetrating member has a tapered leading end to facilitate placement of said disc penetrating member into the disc space.

159. The apparatus of claim 114 in combination with a tap for insertion through said guard member for tapping the two adjacent vertebral bodies.

160. The apparatus of claim 114, further comprising an extractor coupler having one end adapted to couple with said guard member and an opposite end adapted to couple with an extraction device.

161. The apparatus of claim 115, wherein said upper and lower surfaces are at least in part parallel to each other.

162. The apparatus of claim 115, wherein said guard member has an external surface at its distal end and said disc penetrating extensions are at least in part coextensive with said external surface.

163. The apparatus of claim 114, wherein said disc penetrating extensions have the same height.

164. The apparatus of claim 115, wherein said disc penetrating extensions are diametrically opposed to each other.

165. The apparatus of claim 115, wherein said portion of said disc penetrating extension has a height between said upper and lower surfaces that approximates the height of the normal disc space between the adjacent vertebral bodies.

166. The apparatus of claim 115, wherein said guard member conforms at least in part to the exterior surface of the vertebral bodies of the lateral aspect of the adjacent vertebral bodies.

167. The apparatus of claim 115, further comprising means for penetrating the two adjacent vertebral bodies.

168. The apparatus of claim 167, wherein said penetrating means includes teeth for insertion into the spine.

169. The apparatus of claim 167, wherein said penetrating means includes at least one prong for insertion into the spine.

170. The apparatus of claim 115, further comprising a removable inner sleeve.

171. The apparatus of claim 115, further comprising means for limiting the depth of penetration of said disc penetrating extensions into the disc space.

172. The apparatus of claim 115, wherein said guard member comprises a hollow tube.

173. The apparatus of claim 172, wherein said hollow tube has a detachable distal end portion.

174. The apparatus of claim 115, wherein said disc penetrating extensions have a tapered leading end to facilitate placement of said disc penetrating extensions into the disc space.

175. The apparatus of claim 115 in combination with a bone removal device having a portion sized for passage through said opening of said guard for forming through said opening of said guard member an implantation space across the disc space.

176. The apparatus of claim 115 in combination with an implant driver sized in part for passage through said opening of said guard for passing an implant through said guard member and into the disc space.

177. The apparatus of claim 115 in combination with a spinal distractor sized for passage through said guard member, said spinal distractor having a body and a disc penetrating member extending from said body and into the disc space between the two adjacent vertebral bodies for bearing against the adjacent endplates of the two adjacent vertebral bodies.

178. The apparatus of claim 177, wherein said disc penetrating member has a tapered leading end to facilitate placement of said disc penetrating member into the disc space.

179. The apparatus of claim 115 in combination with a tap for insertion through said guard member for tapping the two adjacent vertebral bodies.

180. The apparatus of claim 115, further comprising an extractor coupler having one end adapted to couple with said guard member and an opposite end adapted to couple with an extraction device.

181. The apparatus of claim 131, wherein said upper and lower surfaces are at least in part parallel to each other.

182. The apparatus of claim 131, wherein said guard member has an external surface at its distal end and said disc penetrating extension is at least in part coextensive with said external surface.

183. The apparatus of claim 131, further comprising a second disc penetrating extension extending from said guard member for insertion into the disc space and for bearing against the endplates of the adjacent vertebral bodies.

184. The apparatus of claim 183, wherein said disc penetrating extensions are diametrically opposed to each other.

185. The apparatus of claim 183, wherein said disc penetrating extensions have the same height.

186. The apparatus of claim 183, wherein said disc penetrating extensions are of a different height.

187. The apparatus of claim 183, wherein said disc penetrating extensions are of a different length.

188. The apparatus of claim 131, wherein said portion of said disc penetrating extension has a height between said upper and lower surfaces that approximates the height of the normal disc space between the adjacent vertebral bodies.

189. The apparatus of claim 131, wherein said guard member conforms at least in part to the exterior surface of the vertebral bodies of the lateral aspect of the adjacent vertebral bodies.

190. The apparatus of claim 189, wherein said upper and lower surfaces are at least in part parallel to each other.

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191. The apparatus of claim 189, further comprising a second disc penetrating extension extending from said guard member for insertion into the disc space and for bearing against the endplates of the adjacent vertebral bodies.

192. The apparatus of claim 191, wherein said disc penetrating extensions are diametrically opposed to each other.

193. The apparatus of claim 191, wherein said disc penetrating extensions have the same height.

194. The apparatus of claim 191, wherein said disc penetrating extensions are of a different height.

195. The apparatus of claim 191, wherein said disc penetrating extensions are of a different length.

196. The apparatus of claim 189, wherein said portion of said disc penetrating extension has a height between said upper and lower surfaces that approximates the height of the normal disc space between the adjacent vertebral bodies.

197. The apparatus of claim 131, further comprising means for penetrating the two adjacent vertebral bodies.

198. The apparatus of claim 197, wherein said penetrating means includes teeth for insertion into the spine.

199. The apparatus of claim 197, wherein said penetrating means includes at least one prong for insertion into the spine.

200. The apparatus of claim 131, further comprising a removable inner sleeve.

201. The apparatus of claim 131, further comprising means for limiting the depth of penetration of said disc penetrating extension into the disc space.

202. The apparatus of claim 131, wherein said disc penetrating extension has a tapered leading end to facilitate placement of said disc penetrating extension into the disc space.

203. The apparatus of claim 131 in combination with a bone removal device having a portion sized for passage through said opening of said guard for forming through said opening of said guard member an implantation space across the disc space.

204. The apparatus of claim 131 in combination with an implant driver sized in part for passage through said opening of said guard for passing an implant through said guard member and into the disc space.

205. The apparatus of claim 131 in combination with a spinal distractor sized for passage through said guard member, said spinal distractor having a body and a disc penetrating member extending from said body and into the disc space between the two adjacent vertebral bodies for bearing against the adjacent endplates of the two adjacent vertebral bodies.

206. The apparatus of claim 205, wherein said disc penetrating member has a tapered leading end to facilitate placement of said disc penetrating member into the disc space.

207. The apparatus of claim 131 in combination with a tap for insertion through said guard member for tapping the two adjacent vertebral bodies.

208. The apparatus of claim 131, further comprising an extractor coupler having one end adapted to couple with said guard member and an opposite end adapted to couple with an extraction device.

209. The apparatus of claim 139, wherein said upper and lower surfaces are at least in part parallel to each other.

210. The apparatus of claim 139, wherein said guard member has an external surface at its distal end and said disc penetrating extension is at least in part coextensive with said external surface.

211. The apparatus of claim 139, further comprising a second disc penetrating extension extending from said guard member for insertion into the disc space and for bearing against the endplates of the adjacent vertebral bodies.

212. The apparatus of claim 211, wherein said disc penetrating extensions are diametrically opposed to each other.

213. The apparatus of claim 211, wherein said disc penetrating extensions have the same height.

214. The apparatus of claim 211, wherein said disc penetrating extensions are of a different height.

215. The apparatus of claim 211, wherein said disc penetrating extensions are of a different length.

216. The apparatus of claim 139, wherein said portion of said disc penetrating extension has a height between said upper and lower surfaces that approximates the height of the normal disc space between the adjacent vertebral bodies.

217. The apparatus of claim 139, wherein said guard member conforms at least in part to the exterior surface of the vertebral bodies of the lateral aspect of the adjacent vertebral bodies.

218. The apparatus of claim 217, wherein said upper and lower surfaces are at least in part parallel to each other.

219. The apparatus of claim 217, further comprising a second disc penetrating extension extending from said guard member for insertion into the disc space and for bearing against the endplates of the adjacent vertebral bodies.

220. The apparatus of claim 219, wherein said disc penetrating extensions are diametrically opposed to each other.

221. The apparatus of claim 219, wherein said disc penetrating extensions have the same height.

222. The apparatus of claim 219, wherein said disc penetrating extensions are of a different height.

223. The apparatus of claim 219, wherein said disc penetrating extensions are of a different length.

224. The apparatus of claim 217, wherein said portion of said disc penetrating extension has a height between said upper and lower surfaces that approximates the height of the normal disc space between the adjacent vertebral bodies.

225. The apparatus of claim 139, further comprising means for penetrating the two adjacent vertebral bodies.

226. The apparatus of claim 225, wherein said penetrating means includes teeth for insertion into the spine.

227. The apparatus of claim 225, wherein said penetrating means includes at least one prong for insertion into the spine.

228. The apparatus of claim 139, further comprising means for limiting the depth of penetration of said disc penetrating extension into the disc space.

229. The apparatus of claim 139, wherein said disc penetrating extension has a tapered leading end to facilitate placement of said disc penetrating extension into the disc space.

230. The apparatus of claim 139 in combination with a bone removal device having a portion sized for passage through said passageway of said guard for forming through said passageway of said guard member an implantation space across the disc space.

231. The apparatus of claim 139 in combination with an implant driver sized in part for passage through said passageway of said guard for passing an implant through said guard member and into the disc space.

232. The apparatus of claim 139 in combination with a spinal distractor sized for passage through said guard member, said spinal distractor having a body and a disc penetrating member extending from said body and into the disc space between the two adjacent vertebral bodies for bearing against the adjacent endplates of the two adjacent vertebral bodies.